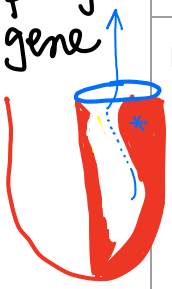
Ch14 #

Cardiomyopathy clinical details

AD MyH7 gene
β myosin ++ gene



	Hypertrophic	Dilated
	20-40 yo: ♂ CHEST PAIN on EXERTION SYNCOPAL ATTACKS,	Alcohol Sarcoidosis, DMD
Histology	Banana shaped cavity — SUDDEN cardiac death BASKET BALL match Sub-valvular aortic stenosis Mitral valve Echo ⇒ Systolic anterior movement of anterior valve EDV↓ Predominant diastolic malfunction CO↓ : Coronary blood flow ↓	Thinned out myocardium * global Hypokinesia 
Pulse	PULSUS BISFIRIENS	DICROTIC PULSE – pedal edeme – pulm edeme
Murmur	* Ejection systolic murmur except loudr ↓ Valsalva, standing amylnitrate (n) ⇒ ALL MURMURS ↓ ↓ Valsalva, standing, amylnitrate	(FUNCTIONAL) MR|TR pansystolic murmur
Treatment of choice	I.C.D ± alcohol based septal ablation PROPRANOLOL + DISOPYRAMIDE	Cardiac Transplant – CRT-D warfarin + spironolactone ± digoxin

Restrictive cardiomyopathy RAREST, amyloidosis, Radiation, Sarcoidosis M/C

Histology STIFF VENTRICLE	gross: Atrial size > Ventricle size m/e: MASSON TRICHOME: +++ blue in myocardium (Collagen)
Pulse RV compliance ↓: Pedal edeme, Ascites (abdo distention) LV " ↓: SOB, ORTHOPNEA, EFFORT INTOLERANCE	PULSUS PARADOXSUS ±
JVP finding	KUSSMUAL SIGN 
IOC →	Cardiac MRI vs endomyocardial Biopsy gold std
Cardiac catheterization	Square root wave sign ±

Rx: Cardiac Tx, spironolactone, warfarin

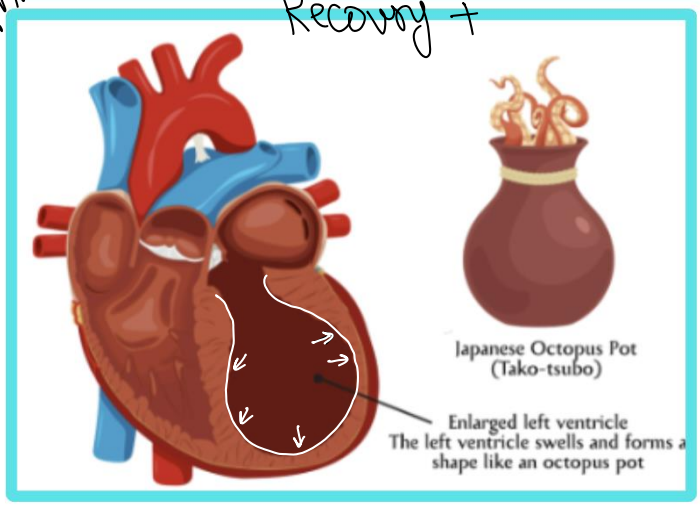
Takotsubo cardiomyopathy/ Broken heart syndrome

death of loved one!

- Mimics MI presentation
- Elevated cardiac biomarkers with ST segment elevation
- Diagnosis made in cath lab — Coronary angiography → NORMAL
- Management : I.A.B.P → Recovery +

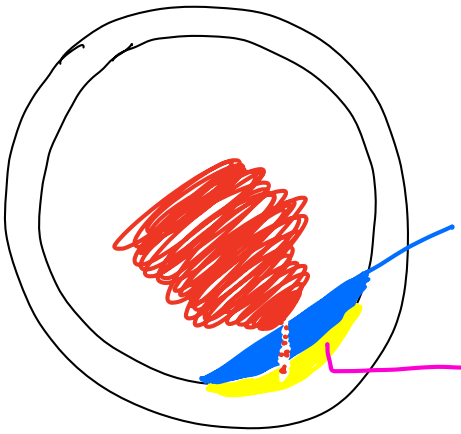
dobutamine
Norepinephrine

TRAPPED in an elevator during earthquake
↓
Catecholammies + SURGE
↓
Chest pain at Rest
ST ↑
Troponin I elevated
T
CK-MB



MCC death in india
↳ I.H.D

MI



FIBROUS CAP

Foam cells
Macrophages + oxidised LDL

! Fatty STREAKS

PLAQUE FISSURE
collagen XFISURE
platelet aggregation : THROMBUS

MC BV involved in atherosclerosis
↓
Abdominal AORTA

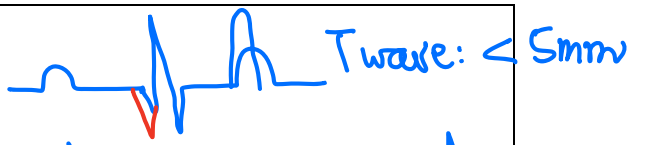
LAD → LV : Ant wall : V_2 V_3 V_4
RCA → RV : inf wall : lead II, III, aVF #

* EXCRUCIATING CHEST PAIN, Radiation of pain Arm (L), (L) shoulder, jaw, epigastrium

Myocardial infarction

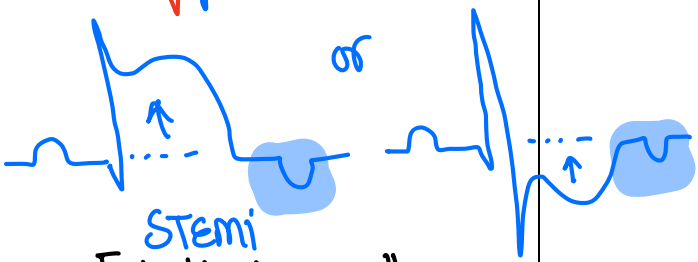
Earliest ECG finding

HYPERACUTE T wave



ECG finding that persists for whole life/ Old MI

deep Q wave



STEMI
Full thickness #
FIBRIN Rich CLOT
FIBRINOLYSIS

NSTEMI
partial # Thickness
Platelet Rich Clot

First cardiac biomarker to rise in MI

ischemia modified albumin: < 1 HOUR
HEART fatty acid binding protein: 1-3 HOUR
Troponin I/T = 3-6 HOURS

myoglobin = Skeletal muscle source

Last to rise in MI (BEST)

LDH

Cardiac biomarker of reinfarction > 72 hours : CPK-MB

" " " " : Troponin I/T: ↑ 20% elevation over (admission Value)

Treatment of Choice for STEMI

↳ * Primary percutaneous coronary intervention

NSTEMI → PCI

- iv TIROFIBAN
- iv EPTIFIBATIDE
- iv CANGRELOR

→ 96116/IIIa ⊖

First medical contact to balloon time

↳ < 90 minutes

Window period for thrombolysis: < 12 HRS of symptom onset

30/90 min | 6 hr/12 HOUR

Door to needle time (cath lab facility is not available)

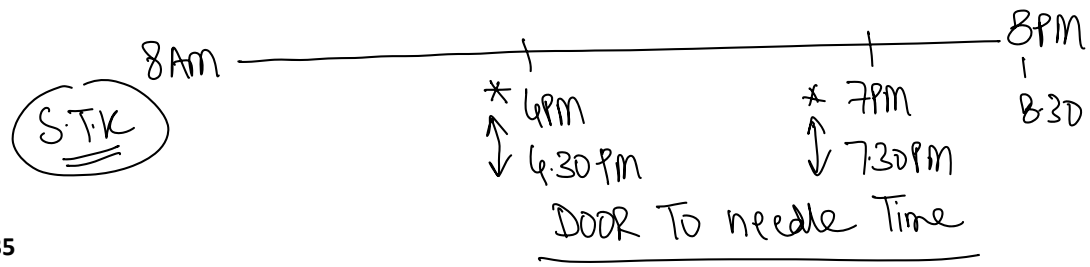
↳ < 30 minute

Rescue PCI (< 50% ST-segment resolution at 60–90 min after fibrinolysis)

↳ failure of Thrombolysis

STEMI: Resolution

GOLDEN PERIOD MI = 1-3 HRS



Complications of myocardial infarction

Most common complication in few hours: V.FIB, V.Tach

MC cause of death > 24 hours → CARDIOGENIC SHOCK

Death 3-5 days → ELECTROMECHANICAL DISSOCIATION → Cardiac Rupture

MC valvular lesion seen in MI → M.R

Dressler syndrome → Aspirin
autoimmune pericarditis

AIVR : REPERFUSION Arrythmia
(Slow V.T)

Mnemonic

C: Cardiogenic shock

A: Arrhythmias

L: LV aneurysm →

M: Mitral regurgitation (papillary muscle dysfunction /rupture

D: Dressler

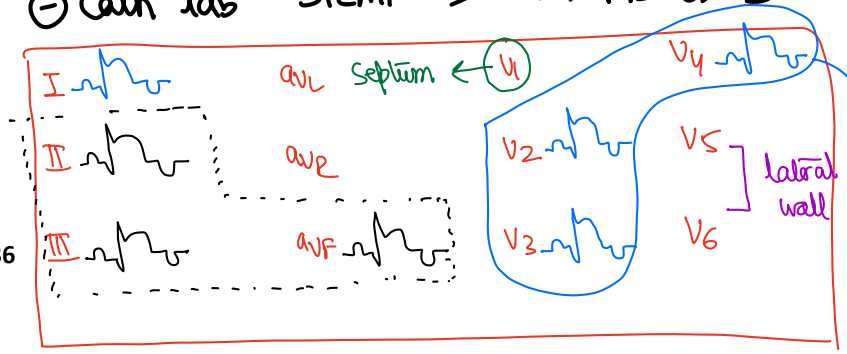
Rx: BEST-MOAN

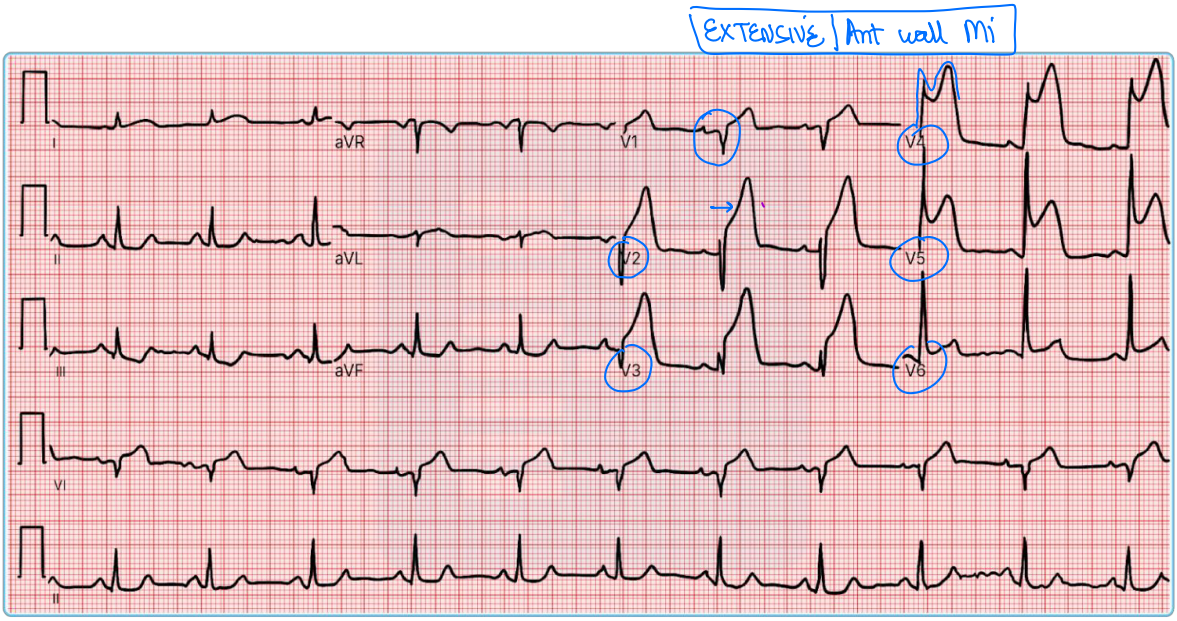
Beta blockers - Enoxaparin - statins - THROMBOLYSIS / TIROFAN

Morphine - O_2 - Aspirin - NTG
Atorvastatin, ACEi

1. Aspirin chewable + Ticagrelor: DAPT
2. O_2 SpO_2 < 93% : HUDSON MASK
3. SL NTG CI: SBP < 90/60
4. morphine: vagotonic action: CONSERVE FUEL/O_2
5. Metoprolol CI: SBP < 90/60, inj wall MI
6. Enoxaparin: ⊖ propogation of clot
7. ATORVASTATIN, ACEi
8. Cath lab: STEMI ⇒ Primary P.C.I : FMC - balloon < 90min

⊖ Cath lab STEMI ⇒ THROMBOLYSIS FMC - needle < 30 min

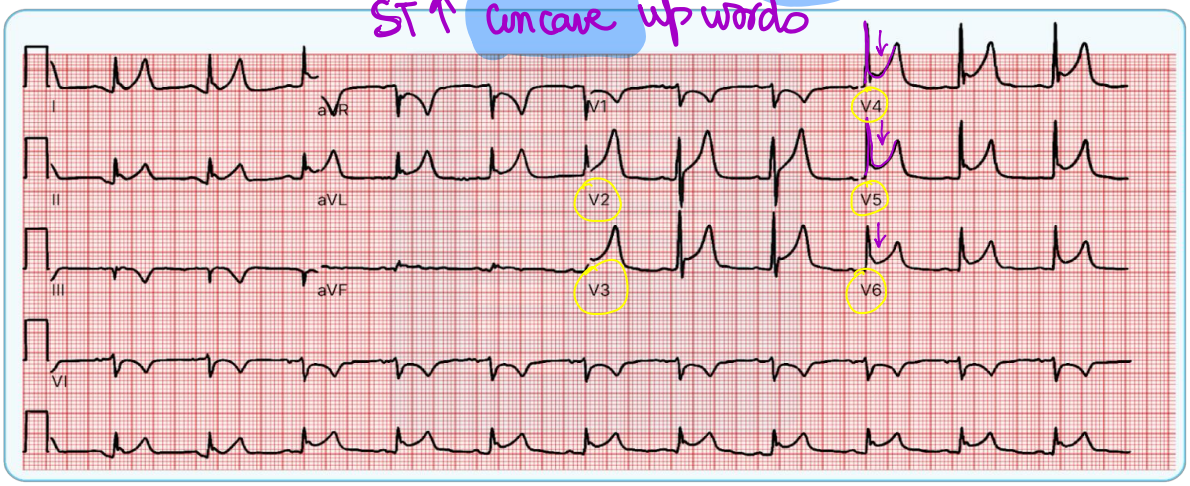




Acute PERICARDITIS

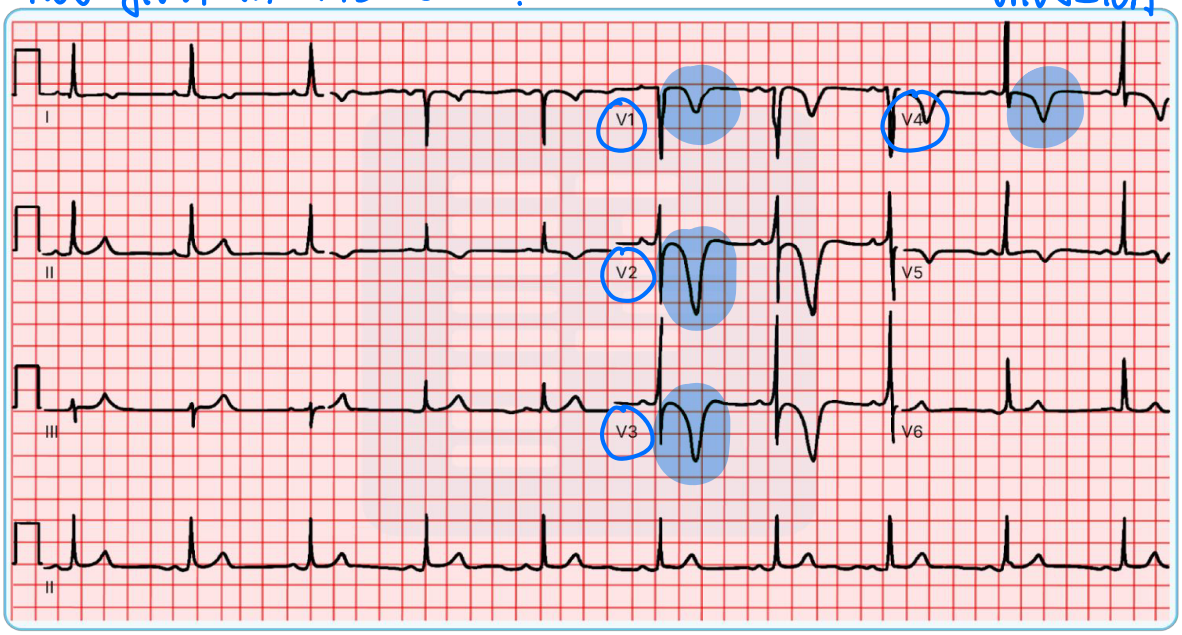
POST-URTI, c/o CHEST PAIN Rest x 3 days

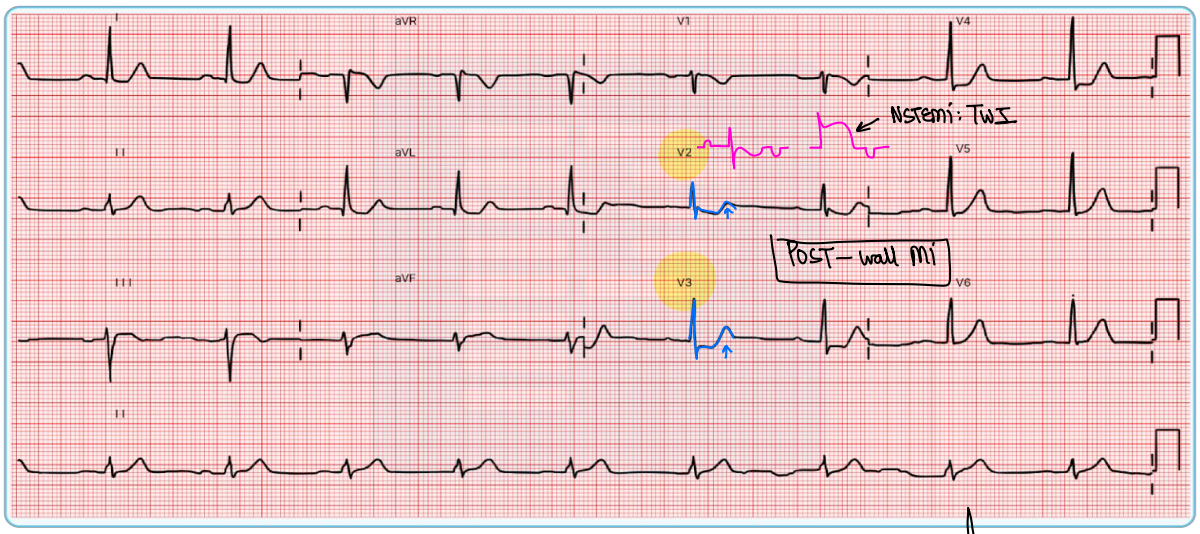
ST ↑ Concave upwards

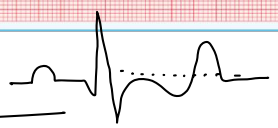


STATIN/ Aspirin/ STK/ NTG
Not given in this case?

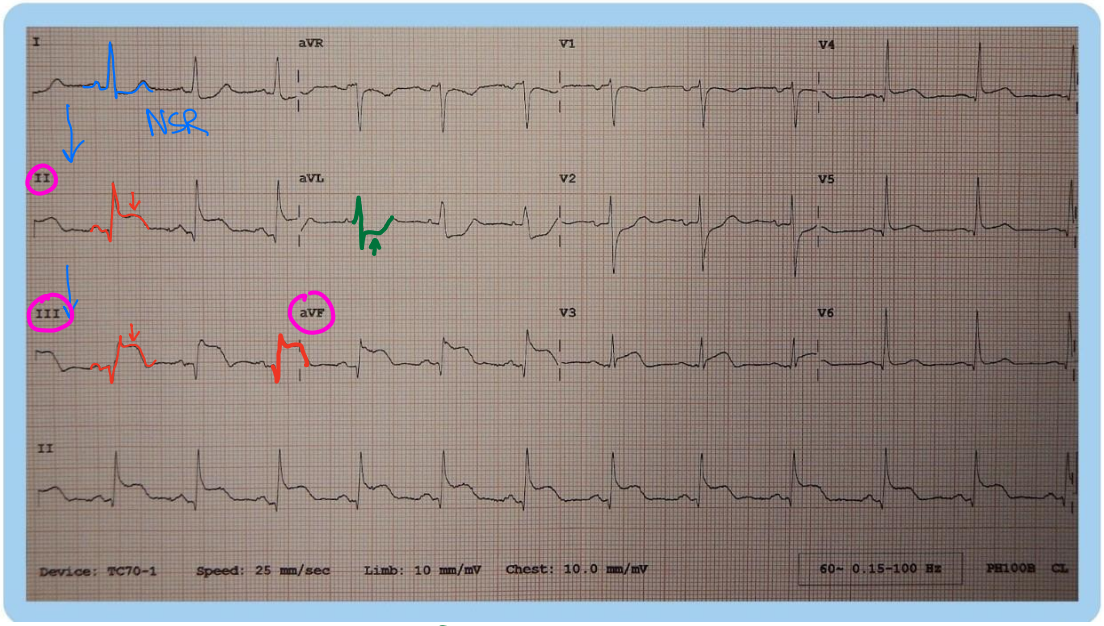
NSTEMI : Twave inversion





* POST-WALL MI ⇒ V2, V3, V4 ⇒ 

V7 V8 V9



INF WALL MI: RCA ≠

Additional Notes

Additional Notes

Additional Notes

Additional Notes

Additional Notes

Additional Notes

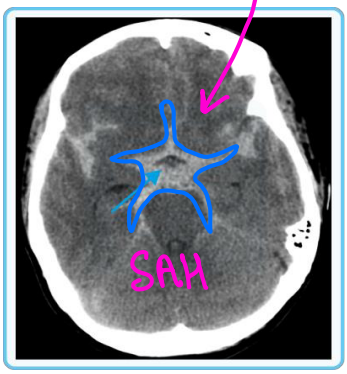
Additional Notes

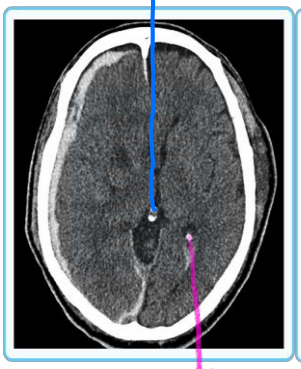
Additional Notes

STAR of death

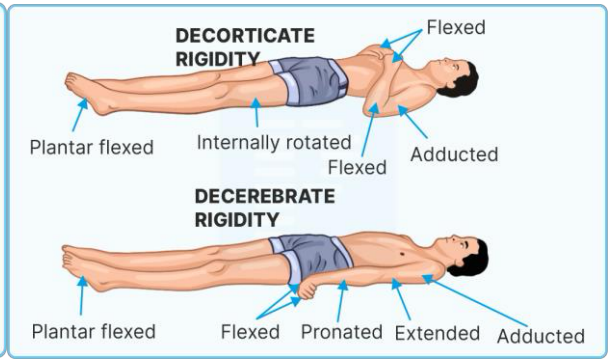
pineal gland calcification

Neurology





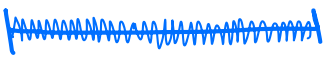
choroid plexus calcification



Seizures and epilepsy

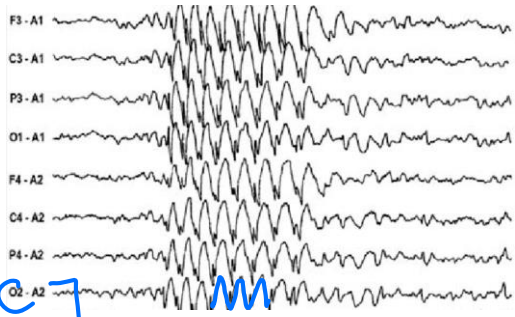
MCC of acquired epilepsy in India is : NCC : intracranial calcification

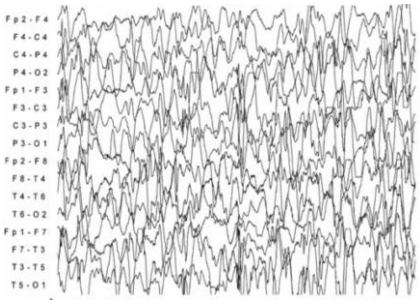
Normal EEG finding with eyes open: β : 13–30 Hz



Normal EEG findings with eyes closed: α : 8–13 Hz

EEG finding of < 3 Hz spike and slow wave pattern and multiple seizures types is seen in LGS





DOC

Ethosuximide/ Valproate/ Lamotrigine

ACTH / Vigabatrin if associated with TS

Scholastic performance poor

Vacant staring spells

3/sec spike & slow

ABSENCE/ petit Mal epilepsy

* HYPSRYTHMIA

* PHENYTOIN, CBZ: ☹ WORSENS ↑

* CBZ ⇒ SIADH → Na ↓

TLC: agranulocytosis

Drug of choice for Seizures in patient >5 minutes in a patient with GTCS No Touch policy	GCSF : status epilepticus 1. iv Lorazepam and repeat if necessary — iv LORAZEPAM or intranasal midazolam / im lorazepam 2. Start Phenytoin or Valproate or Levetiracetam **If failure to respond to BZD 2 doses and 1st line AED** then diagnose as **Refractory SE** infusion 3. PROPOFOL : Rapid sequence intubation, ET *T1 = time to treat and T2= risk of neuronal injury* ~5 min ~30 min green urine in urobag
Focal seizures CBZ LCOP ⇒	Starts with Aura : visual blurring Jacksonian march or Marching epilepsy epilepsy with Todd paralysis ↳ inability to use arm, leg: Variable Time Complex hallucinations and automatisms. Burning RUBBER / DEAD FISH ↳ involuntary smacking lips MRI shows hippocampal sclerosis. Diagnosis: ± = epileptogenic focus Mesial Temporal lobe sclerosis Rx : Neuro-surgery LAMOTRIGINE, CBZ, OXCARBAZEPINE PHENYTOIN

* PREMONITORY SYMPTOMS

GTCS M/C Valproate levetiracetam or lamotrigine ♀	Ictal cry → TONUS → CLONUS Usually treatment is given for 2 years and then tapering is done Lamotrigine can be used in both GTCS and focal seizures Clonus: Violent JERKING all limbs 15-30 sec Uprolling eyeballs Frothing Corners PERIORAL CYANOSIS Tongue bite +/-
Absence seizures	Sudden brief loss of consciousness without loss of postural control Vacant staring spells EEG finding of 3/sec spike and slow wave Carbamazepine and phenytoin worsen absence seizures with → ATONIC S/ drop attacks Rx: Valproate good prognosis: age ↑ severity ↓

* Valproate ⇒ HYPERAMMONEMIA (LFT), alopecia, wt loss

- MC type of epilepsy in children: → Benign Rolandic PANCREATITIS
- MC type of seizures in children: → Febrile seizures
- MC type of seizures in neonates: → Subtle seizures c/o JITTERINESS

epilepsy → * focal seizures

- Leading cause of subtle seizures: H.I.E

Febrile seizures

Best drug for intermittent prophylaxis: → ORAL CLOBAZAM/ Diazepam

* Best drug for continuous prophylaxis: oral valproate Don't use phenytoin

Best drug for management of acute episode at home: → Rectal diazepam
intranasal midazolam

8mth

Salaam seizures:
myoclonic JERKS: Trunk
EEG: grossly chaotic rythm

inj ACTH

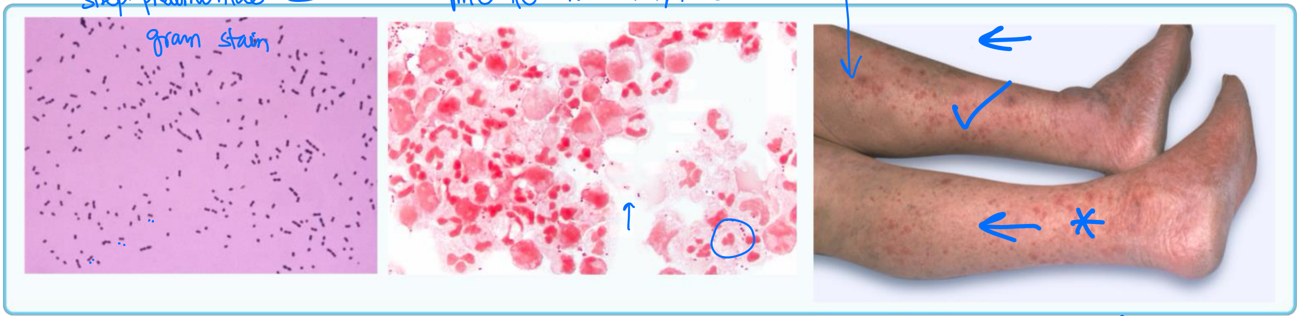
E. coli: (india)

Quellung Reaction
india ink

Septic shock : NS + NORAD
TARGET MAP : > 65 mm Hg

Pyogenic Meningitis

Strep. pneumoniae ∞ gm (-) IC: N. meningitidis



MCC in neonate with bulging AF and vacant stare : Strep. agalactiae > LISTERIA monocytogenes

Rx: CEFOTAXIME + ampicillin

Leading cause of pyogenic meningitis in adults/ > 3 months to < 55 years

Strep. pneumoniae adult | child

Leading cause of pyogenic meningitis in adults with purpuric rash and distributive shock

N. meningitidis : DIC : petechiae, purpura

Perform guarded LP and then start Empirical antibiotic treatment within 60 minutes with

* CEFTRIAXONE + VANCOMYCIN

Add coverage for + AMPICILLIN (LISTERIA) in alcoholics/ heart transplant

* Mass Chemoprophylaxis for N.meningitidis with CIPROFLOXACIN
HCW " " " → CEFTRIAXONE

Recurrent meningitis in adults with meningococcus is due to C5-C9 deficiency → Meningococcus
MAC

Whether neuroimaging or LP first in case of meningitis

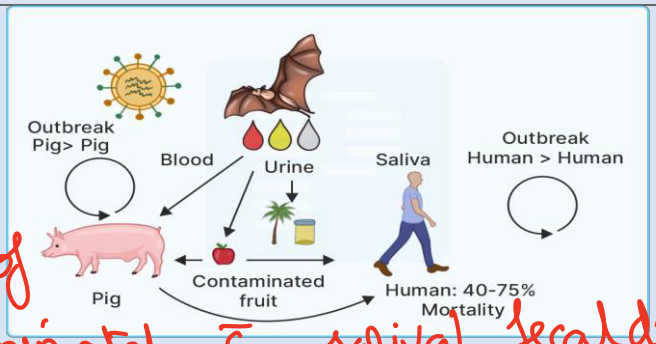
Always do neuroimaging first if any one present

- Papilledema
- Immunocompromised state
- New-onset seizures
- Focal neurological deficit
- Altered sensorium / low GCS
- Neoplasm / known CNS lesion

PIN-FANS
any 1 +
PERFORM ⇒ neuroimaging

* FEVER + HEADACHE + nuchal Rigidity
✓ rule out Raised ICP : fundus | NCCT head
✓ guarded LP : m/e: PMN +++
✓ IV: send blood culture ⟶ start Antibiotics

Viral encephalitis

Overall MCC ↓ HSV-1 FEVER x 1 day ALTERED sensorium O/E: ⊖ nuchal Rigidity	- Shows predilection for _____ lobe * - CSF shows RBC in CSF * - EEG Shows PLED - Empirical Rx started with Hippocampus # TEMPORAL Periodic lateralized epileptiform discharge ACYCLOVIR MRI heads: Temporal lobe inflamm IOC: CSF PCR HSV-1
Leading cause in India U.P. (GORAKHPUR)	Japanese B encephalitis (Culex Mosquito) Rx = ? ↓°: vaccine
Kerala outbreak SILIGURI Nipah virus * Consumption of fruits contaminated ε saliva/fecal dripping of fruit BAT ⇒ PTEROPUS * DATE PALM SAP * CFR = 40-75%	 death: encephalitis (microhemorrhages in brain)

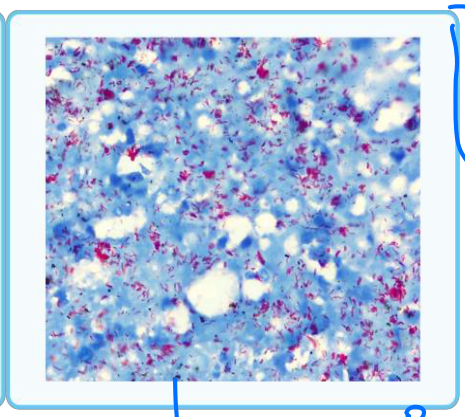
* Viral meningitis ⇒ ENTEROVIRUS: Coxsackie B
FEVER + headache + nuchal rigidity
↓: CSF: Lymphocytes ++, Sugar: Normal
proteins ↑

* LP = Ci Raised ICP, Risk of Tonsillar Herniation

Findings of CSF

Remarks	Cells	Sugar	Protein	Opening pressure	Color
Normal	0-5 lymphocytes	$\frac{2}{3}$ (bld sugar)	15-45 mg/dL	10-20 mm Hg clear 50-180 mm H_2O	
ABM > Pyogenic Rx → CEFTRIAXONE + Vancomycin	1000 PMN	↓	↑ Antibodies	↑	**Turbid / Cloudy**
TBM > AIDS + PEM gd IV + WHO	100-1000 lymphocytes	↓	↑↑ Cob web Coagulum	↑	**Clear/ Straw**
Viral meningitis ↕ encephalitis daxp	> 25-100 lymphocytes	normal	> 1g/dL ↑	↑	**Clear**

Q. 7-year-old child has been sick for 4 weeks with persistent fever, irritability, vomiting, and recent onset of headache and neck stiffness. For past one day mother says child is in altered sensorium and not recognising the mother. Lumbar puncture reveals: opening pressure raised, protein 180 mg/dL, glucose 35 mg/dL (blood glucose 100 mg/dL), and lymphocytic predominance (120 cells/mm³). What is the most likely diagnosis?



n CSF glucose > 0.6

35/100 = 0.3

a. Viral meningitisb.

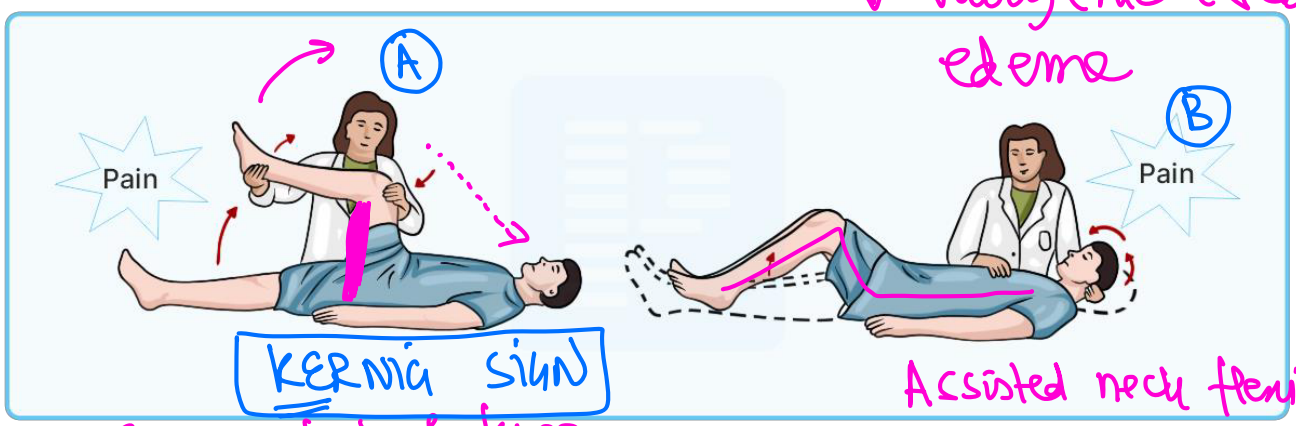
b. Pyogenic meningitis

c. Tuberculous meningitis

d. Cryptococcal meningitis

IOC ⇒ LP: CSF CBNAAT for MTB
CSF CULTURE
L(liquid): MIDDLE BROOKS media

Rx: A.T.T x 1 year
+ DEXAMETHASONE: 6 wks: ↓ vasogenic cerebral edema



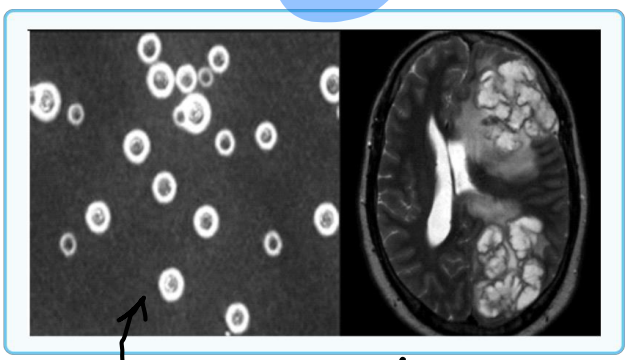
KERNIG SIGN
EXTENSION of knee
stretch HAMSTRING muscle: spasm
pt. wince ☹ pain

Assisted neck flexion
involuntary HJ flexion
KJ
BRUDZINKI sign

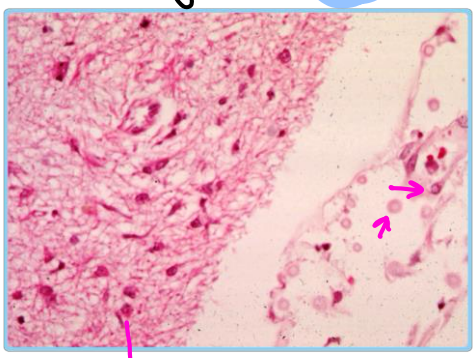
Signs of Meningeal irritation ✓

Q. HIV positive truck driver comes with fever and headache for the past 3 days. He also has photophobia and cannot drive. On examination nuchal rigidity is noted. Fundus shows papilledema. CSF preparation and MRI head is shown. Diagnosis is?

IOC: CSF LATERAL flow assay > urine lateral flow assay



INDIA INK stain



Mucicarmine

Mode of entry of fungus into patient

Work up

1. MRI head → Soap bubble app, Raised ICP
2. Guarded Lumbar puncture and CSF cytology → CSF: L++, Sugar: ↓, PROTEIN: ↑
3. Urine or blood lateral flow assay for antigenic detection for cryptococcus

Treatment= Liposomal Amphotericin B + 5-flucytosine IV 2wk ← Initial

* oral fluconazole: till 12 months or

2° prophylaxis of cryptococcus: CD4 count: > 100 cells/cu·mm

PCR HIV RNA < 500 Copies/mm

Route of acquiring infection

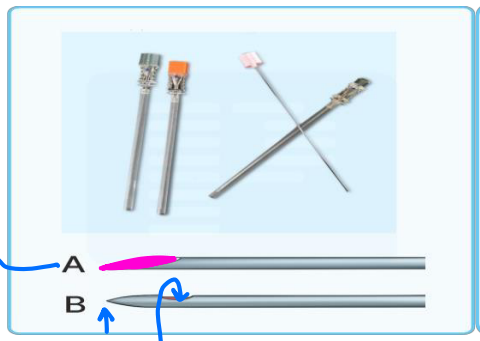
1. Pigeon droppings inhalation
2. Eucalyptus TREE BARK

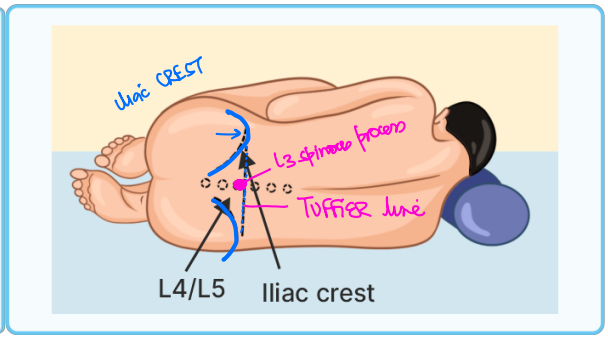
CD4:	TB, KS
< 500	P. JIROVECI pneumonia
< 200	CRYPTOCOCCUS Neoformans, CEREBRAL Toxoplasmosis
< 100	CMV Retinitis
< 50	

Lumbar puncture L_3-L_4

Preferred site

→ QUINCKE





WHITACRE

C: SPROTTE

Contraindications to LP

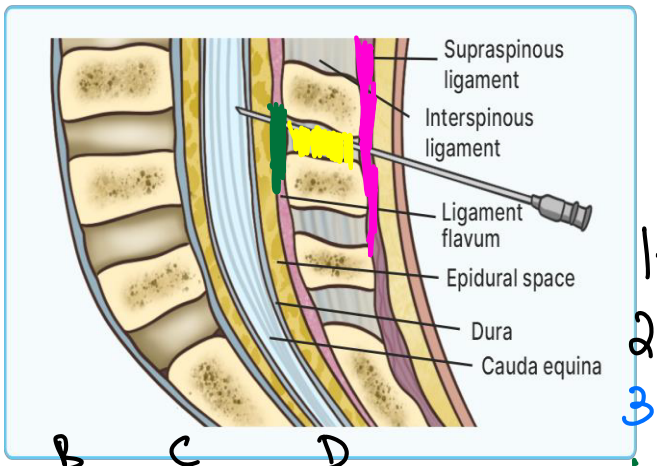
1. Raised ICP
2. Local site infection PYODERMA
3. Kyphoscoliosis

* 4. bleeding diathesis INR > 1.7

- Highest point of iliac crest joined to form Tuffier line that cuts through L_3 spinous process

- Most common complication of LP is headache. Best drug for management of PDPH _____

↳ IV caffeine > opioids



LAYERS PIERCED during LP

1. Skin sc
2. SUPRASPINOUS ligament
3. INTRASPINOUS "
4. lig. flavum
5. DURA
6. Arachnoid matter

CSF

A → PROTEIN SUGAR

B → CYTOLOGY

C → CULTURE gram stain

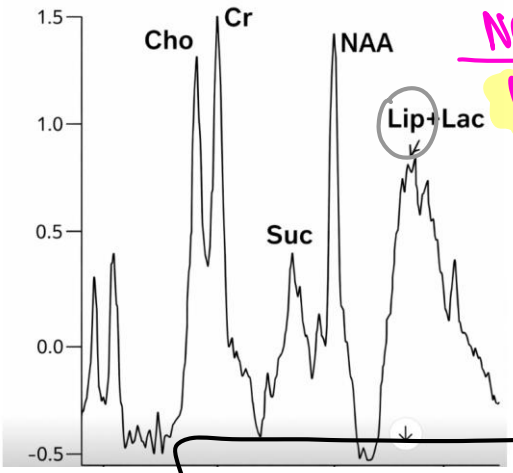
D → 4°C → special study CBNAAT, PCR, india ink

RICE grain calcification: cysticercosis

Neurocysticercosis (caused by ingestion of proglottids containing eggs of tenia solium)

Early

fecally contaminated soil grown vegetables *



NCC vs TUBERCULOMA

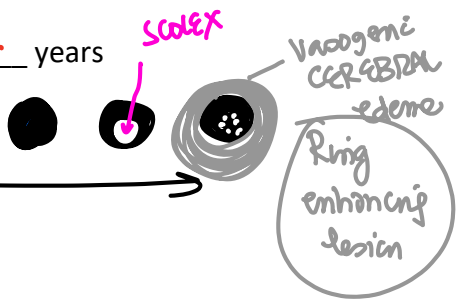
MRS
- lipid PEAK = TB
- amino Acid = NCC

epileptogenic foci

* Rx: **Calcified lesions**: Only Valproate x 2 _____ years

RX: **Hypointense lesions with/without scolex**

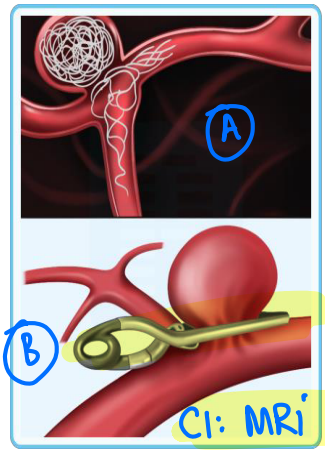
1. DEXAMETHASONE IV
2. Albendazole
3. Valproate x 2 years



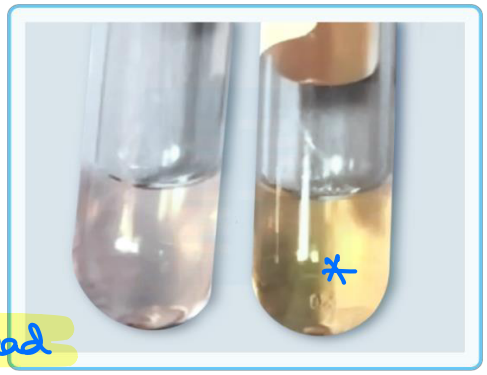
DIFFERENCE BETWEEN NEUROCYSTICERCOSIS AND CNS TUBERCULOMAS LESIONS

NEUROCYSTICERCOSIS	TUBERCULOMA
1. Lesions are <20 mm and may be single or multiple. 2. Meningitis feature is not there. 3. Present at grey-white matter junction. 4. Other involvements like eyes, muscles or subcutaneous tissues. 5. T2W shows hyper intensity with hypointense scolex in it. No midline shift and ring enhancement is there depending upon the staging. 6. MR spectroscopy shows multiple amino acid peaks.	1. Often multiple and >20 mm because of conglomeration. 2. Meningitis is usually associated. 3. More common in posterior fossa. 4. Spread is mostly secondary to infection somewhere else. 5. Hy pointensity seen in T2W and midline shift may be present. 6. MR Spectroscopy shows lipid peak.

Subarachnoid hemorrhage



Cl: MRI head



Buzz Words

-Worst headache of my life + nuchal Rigidity

-Thunderclap headache (also seen in Pituitary apoplexy, CVT, Hydrocephalus acute, HTN crisis) : occurs without warning and reaches peak intensity in 1 minutes

-Sudden onset Headache with SAH evidence → CEREBRAL ANGIOGRAPHY

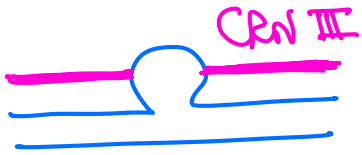
✓ ***-Next best investigation after CT head***

✓ ***-Next best investigation if CT head is normal*** → L.P guarded : RBC in CSF ↓ xanthochromic CSF

- Leading cause of SAH: Trauma > rupture of berry aneurysm

- **First investigation** : NCCT head → blood in sylvian F
  Headache (hours) nuchal Rigidity +, brudzinki sign ⊕
  Stor of death
- Next best investigation after NCCT head → CEREBRAL angiography
- What to do if CT head is normal → guarded L.P
  Tint lemon yellow ↓ xanthochromic
- Finding of guarded Lumbar puncture → RBC ++
- Treatment of choice : Endovascular coiling > Aneurysmal Clipping

- DOC of choice — Nimodipine : 1° protective vasospasm
- 1st step in management of SAH : 1. Nimodipine
  NCCT head evidence 2. CEREBRAL angio
  3 Endovascular coiling
- MC location of Berry aneurysm — ACOM
- MC location of Berry aneurysm prone to rupture — PCOM



- MC cranial nerve involved in ruptured/ un-ruptured berry aneurysm → CRN : 3rd palsy

3rd N palsy ± pupillary sparing
DM

Leading cause of death in SAH

1. Delayed cerebral ischemia — VASOSPASM
2. Hydrocephalus
3. Bleeding
4. Rebleeding
5. Electrolyte imbalance *

BNP +++ : NATRIURESIS : $Na^+ < 125$
SEIZURES +

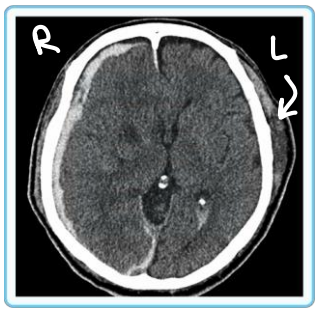
CEREBRAL SALT WASTING SYNDROME → Hypovolemic hyponatremia

urine sodium: ↑
S. sodium: ↓

Euvolemic : SIADH

* EDH ←→ acute SDH

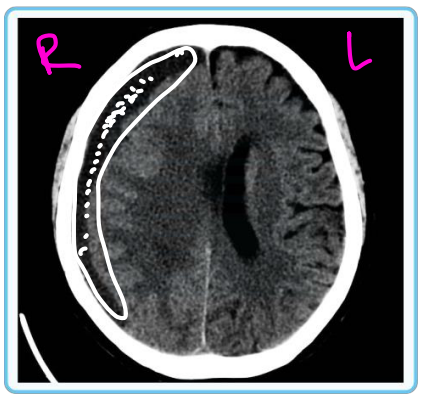
Q. Diabetic patient falls in washroom and head slams against the wall. Lucid interval was noted. From the next day onwards, her son notices she is becoming irritable and sleeps for most part of day. He also tells that she is having severe headache and has trouble speaking and recollecting events. NCCT was done on day 3 and is shown below?



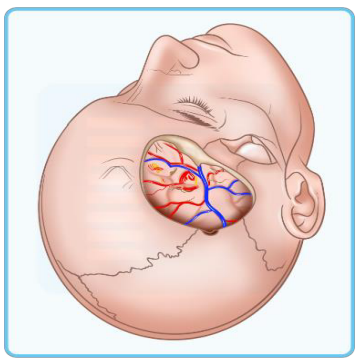
Rt sided. acute Subdural hemorrhage
sickle
↑
HYPERDENSITY
Concave-Convex
Rx
Mannitol | burr hole | craniotomy
decompressive Hemicraniectomy
↳ malignant cerebral edema
* Hemorrhagic stroke

cal evacuation if they do not enlarge. Stupor or coma, hemiparesis, and unilateral pupillary enlargement are signs of larger hematomas. The bleeding that causes larger subdural hematomas is primarily venous in origin, although arterial bleeding sites are sometimes found at operation, and a few large hematomas have a purely arterial origin. In an acutely deteriorating patient, an emergency craniotomy is required. In contrast to epidural hematomas, there is significant morbidity and mortality associated with acute subdural hematomas that require surgery.

Q. Diabetic patient falls in washroom and head slams against the wall. Over the next 3 weeks she becomes forgetful and delirious. NCCT was done.



* Rt chronic Subdural hemorrhage
↓
Hypodensity
Rx : BURR Hole Sx



Clinical observation coupled with serial imaging is a reasonable approach to patients with few symptoms and small chronic subdural collections that do not cause mass effect. Treatment with surgical evacuation through burr holes is usually successful, if a cranial drain is used postoperatively. The fibrous membranes that grow from the dura and encapsulate the collection may require removal with a craniotomy to prevent recurrent fluid accumulation.